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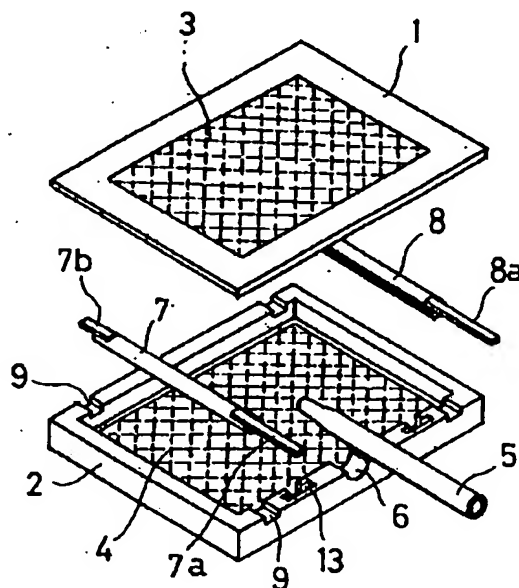
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(54) 【発明の名称】 平面型蛍光灯

(57) 【要約】

【課題】 放電開始時に放電が安定せず、輝度ムラ等を生じる。

【解決手段】 上面ガラス基板1と下面ガラス基板2との縁部をガラスフリット等のシール材によって熱溶着する。同時にリード片7a、7b、8a、8bも上面ガラス基板1と下面ガラス基板2との縁部に固定する。この際、通電に利用しない一方のリード片7b、8bを、上面ガラス基板と下面ガラス基板との接合縁部より内側に配置する。



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【特許請求の範囲】

【請求項1】 蛍光体を塗布した平板状の上面ガラス基板と、蛍光体を塗布した皿状の下面ガラス基板と、この下面ガラス基板を収納するシールドケースと、前記上面ガラス基板と下面ガラス基板との間に形成される空間に対向配置される一対の電極とを備えた平面型蛍光灯において、

前記一対の電極は夫々両端部にリード片が取り付けられ、一方の側のリード片はシールドケースに形成した切欠きを介して外側に突出し、他方の側のリード片は前記上面ガラス基板と下面ガラス基板との接合縁部より内側に配置されていることを特徴とする平面型蛍光灯。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は始動時の放電特性を改良した平面型蛍光灯に関する。

【0002】

【従来の技術】図4～図6に基づいて従来の平面型蛍光灯の構造を説明する。ここで、図4は従来の平面型蛍光灯の分解斜視図、図5は従来の平面型蛍光灯平面図、図6は従来の平面型蛍光灯をシールドケースに収容した状態の要部拡大断面図である。

【0003】平面型蛍光灯は、上面ガラス基板1と下面ガラス基板2を備え、これら上面ガラス基板1と下面ガラス基板2の対向面には蛍光体3、4が塗布され、また下面ガラス基板2は周縁が枠部となった皿状をなし、一方の側の枠部には排気管5を差し込む切欠6が形成され、また前記上面ガラス基板1と前記下面ガラス基板2との間に形成される空間に一対の電極7、8が対向配置され、各電極の両端にはリード片7a、7b、8a、8bが取り付けられている。

【0004】そして、下面ガラス基板2の枠部上面には凹部9…を形成し、これら凹部に前記リード片7a、7b、8a、8bを載置し、フリット10で固定するようにしている。ここで、従来にあっては図5に示すように、一方の側及び他方の側のいずれでも電源に接続することができるように、全てのリード片をシールドケース11の切欠き12を介して外側に突出せしめるようにしている。

【0005】ここで、シールドケース11は点灯始動時に初期の放電を易くし、また点灯時の輝度ムラを押さえるために用いられるものである。また、図中13はHg（水銀）デイスベンサである。

【0006】

【発明が解決しようとする課題】前記したように、従来にあっては、一方の側及び他方の側のいずれからもリード片7a、7b、8a、8bが突出し、図示例にあってはリード片7b、8bが使用されていない。一方、シールドケース10内面にはアルミ箔等14が貼着されているので、通電に使用されないリード片7b、8bに対

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し、シールドケース11が近接導体としての役割を果たすため、放電し易くなる。また、シールドケース10自体を金属製としてもよい。

【0007】しかしながら、平面型蛍光灯とシールドケース11との組み付け時には、どうしても組付誤差が生じることから、リード片とシールドケースとの小さい距離を一定に保つことは非常に難しい。そのため、平面型蛍光灯は、放電開始時に放電が安定せず、輝度ムラ等を生じるという問題がある。

【0008】

【課題を解決するための手段】上記課題を解決すべく本発明に係る平面型蛍光灯は、蛍光体を塗布した平板状の上面ガラス基板と、蛍光体を塗布した皿状の下面ガラス基板と、この下面ガラス基板を収納するシールドケースと、前記上面ガラス基板と下面ガラス基板との間に形成される空間に対向配置される一対の電極とを備えた平面型蛍光灯において、前記一対の電極は夫々両端部にリード片を取り付け、一方の側のリード片はシールドケースに形成した切欠きを介して外側に突出させ、他方の側のリード片は前記上面ガラス基板と下面ガラス基板との接合縁部より内側に配置した。

【0009】上記構造とすることで他方の側のリード片は、シールドケースと接触するおそれがないので、このリード片と対向するシールドケースの側面を切り欠く必要がなくなる。また、予め一方のリード片を上面ガラス基板と下面ガラス基板との接合するので、リード片の先端部から接合縁部までの距離を一定に保つことが容易である。

【0010】

【発明の実施の形態】以下に本発明の実施の形態を添付図面に基づいて説明する。図1は本発明に係る平面型蛍光灯の分解斜視図、図2は同平面型蛍光灯をシールドケースに収容する状態を示す斜視図、図3は同平面型蛍光灯をシールドケースに収容した状態の要部拡大断面図であり、従来と同一部分には同一符号を付して、その説明を省略する。

【0011】本発明にあっては電極7、8の両端に取り付けられているリード片のうち、通電に使用されるリード片7a、8aだけがシールドケース11の一方の側面から突出しており、他方のリード片7b、8bはシールドケース11よりも内側にある。

【0012】上面ガラス基板1と下面ガラス基板2とは縁部にてガラスフリット10等のシール材によって熱溶着されて密閉される。同時にリード片7a、7b、8a、8bも下面ガラス基板2の枠部に形成した凹部9内で固定される。

【0013】この際、通電に利用しない他方のリード片7b、8bは、上面ガラス基板1と下面ガラス基板2との接合縁部より内側に配置される。このとき、接合縁部からリード片7b、8bの先端部までの距離sを、0.

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1~1mmとするのが好ましい。

【0014】上記実施形態によれば、シールドケース11は、この通電に使用しないリード片7b、8bと対応する部分に切欠を設けることなく、蛍光灯を嵌め込むことができる。そして、この嵌め込み時にリード片7b、8bの先端部とシールドケース11との間隙を小さくすることは容易にできる。

【0015】なお、ガラスフリット10は非導電性材料で構成されているので、リード片7b、8bの先端部とシールドケース11との間は電氣的に絶縁されている。

【0016】以上において、両電極7、8間に電圧が印加されると、先ずリード片7a、8a→シールドケース11→リード片7b、8bの閉回路が形成される。閉回路が形成されると、電極7、8に電流が流れ、電極7、8が加熱されて放電空間に放電が起きる。

【0017】そのため、水銀が励起され、紫外線を放出する。この紫外線は上面ガラス基板1と下面ガラス基板2内面の蛍光体3、4を照射し、この結果、蛍光体3、4は全面に亘って均一な輝度で発光する。

【0018】このとき、リード片7b、8bの先端部とシールドケース11との間隙が小さいので、放電安定性が高まり、従来構造の蛍光灯に比し、10ボルト程度低

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い放電電圧で点灯させることができる。

【0019】

【発明の効果】以上に説明したように本発明に係る平面型蛍光灯によれば、リード片の先端部とシールドケースとの間隙を小さくすることができるので、従来構造の蛍光灯に比し、10ボルト程度低い放電電圧で点灯させることができ、点灯開始時の放電安定性を高めることができ、輝度ムラ等を抑えることができる。

【図面の簡単な説明】

【図1】本発明に係る平面型蛍光灯の分解斜視図

【図2】同平面型蛍光灯をシールドケースに収容する状態を示す斜視図

【図3】同平面型蛍光灯をシールドケースに収容した状態の要部拡大断面図

【図4】従来の平面型蛍光灯の分解斜視図

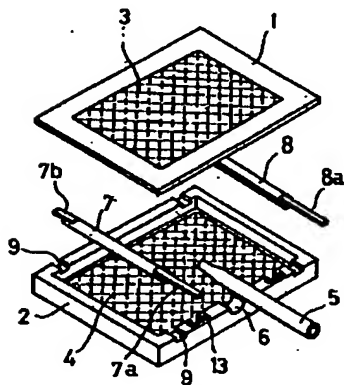
【図5】従来の平面型蛍光灯平面図

【図6】従来の平面型蛍光灯をシールドケースに収容した状態の要部拡大断面図

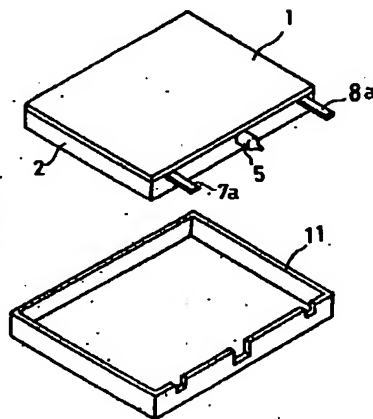
【符号の説明】

1…上面ガラス基板、2…下面ガラス基板、3、4…蛍光体、7、8…電極、7a、8a…一方の側のリード片、7b、8b…他方の側のリード片。

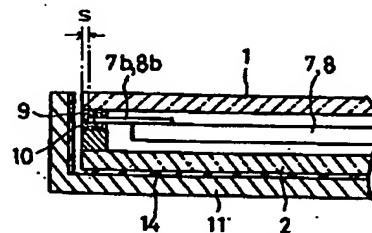
【図1】



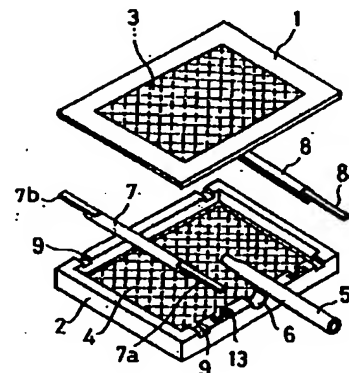
【図2】



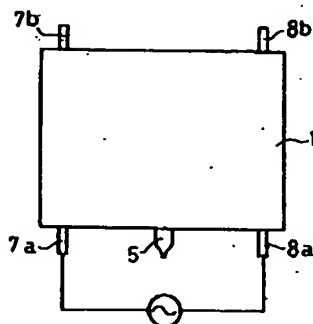
【図3】



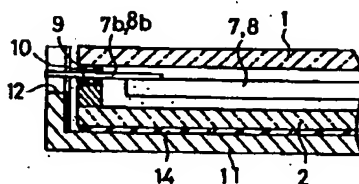
【図4】



【図5】



【図6】



フロントページの続き

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* NOTICES *

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the flat-surface mold fluorescent lamp which improved the discharge property at the time of starting.

[0002]

[Description of the Prior Art] Based on drawing 4 - drawing 6, the structure of the conventional flat-surface mold fluorescent lamp is explained. Here, the decomposition perspective view of the flat-surface mold fluorescent lamp of the former [drawing 4], the flat-surface mold fluorescent lamp top view of the former [drawing 5], and drawing 6 R> 6 are the important section expanded sectional views in the condition of having held the conventional flat-surface mold fluorescent lamp in the shielding case.

[0003] A flat-surface mold fluorescent lamp is equipped with the top-face glass substrate 1 and the inferior-surface-of-tongue glass substrate 2, and fluorescent substances 3 and 4 are applied to the opposed face of these top-faces glass substrate 1 and the inferior-surface-of-tongue glass substrate 2. Moreover, as for the inferior-surface-of-tongue glass substrate 2, the notching 6 by which a periphery inserts an exhaust pipe 5 in one [nothing and] near frame part for dished [used as a frame part] is formed. Moreover, opposite arrangement of the electrodes 7 and 8 of a pair is carried out in the space formed between said top-face glass substrates 1 and said inferior-surface-of-tongue glass substrates 2, and the pieces 7a, 7b, 8a, and 8b of a lead are attached in the both ends of each electrode.

[0004] And crevice 9 - is formed in the frame part top face of the inferior-surface-of-tongue glass substrate 2, and he lays said pieces 7a, 7b, 8a, and 8b of a lead in these crevices, and is trying to fix by the frit 10. If it is in the former, he can project all the pieces of a lead outside through the notch 12 of a shielding case 11, and is trying to close them here so that either by the side of one and another side can be connected to a power source as shown in drawing 5.

[0005] Here, early discharge is made easy to carry out at the time of lighting starting, and a shielding case 11 is used in order to press down the brightness nonuniformity at the time of lighting. Moreover, 13 in drawing is Hg (mercury) dispenser.

[0006]

[Problem(s) to be Solved by the Invention] If it is in the former as described above, and either an one side and an another side side have the pieces 7a, 7b, 8a, and 8b of a lead in a projection and the example of illustration, the pieces 7b and 8b of a lead are not used. the pieces 7b and 8b of a lead which are not used for energization on the other hand since 14, such as aluminum foil, is stuck on shielding case 10 inside - receiving - a shielding case 11 - contiguity - it becomes easy to discharge in order to play a role of a conductor. Moreover, it is good also considering shielding case 10 the very thing as metal.

[0007] However, at the time of attachment by the flat-surface mold fluorescent lamp and the shielding case 11, since an error with a group surely arises, it is very difficult to keep constant a small distance of the piece of a lead, and a shielding case. Therefore, discharge is not stabilized by the flat-surface mold fluorescent lamp at the time of discharge starting, but it has the problem of producing brightness nonuniformity etc.

[0008]

[Means for Solving the Problem] The flat-surface mold fluorescent lamp applied to this invention that the above-mentioned technical problem should be solved. The plate-like top-face glass substrate which applied the fluorescent substance, and the dished inferior-surface-of-tongue glass substrate which applied the fluorescent substance, In the flat-surface mold fluorescent lamp which equipped the space formed between the shielding case which contains this inferior-surface-of-tongue glass substrate, and said top-face glass substrate and inferior-surface-of-tongue glass substrate with the electrode of the pair by which opposite arrangement is carried out. The electrode of said pair attached the piece of a lead in both ends, respectively, one near piece of a lead made it project outside through the notch formed in the shielding case, and the near piece of a lead of another side has been arranged inside the junction edge of said top-face glass substrate and inferior-surface-of-tongue glass substrate.

[0009] Since the near piece of a lead of another side does not have a possibility of contacting a shielding case, it becomes unnecessary to cut and lack the side face of this piece of a lead, and the shielding case which counters by considering as the above-mentioned structure. Moreover, the thing of a top-face glass substrate and an inferior-surface-of-tongue glass substrate for which the distance from the point of the piece of a lead to a junction edge is kept the piece of a lead which is one side beforehand constant since it joins is easy.

[0010]

[Embodiment of the Invention] The gestalt of operation of this invention is explained based on an accompanying drawing below. The decomposition perspective view of the flat-surface mold fluorescent lamp which drawing 1 requires for this invention, the perspective view showing the condition that drawing 2 holds this flat-surface mold fluorescent lamp in a shielding case, and drawing 3 are the important section expanded sectional views in the condition of having held this flat-surface mold fluorescent lamp in the shielding case, give the same sign to the same part as the former, and omit the explanation.

[0011] If it is in this invention, only the pieces 7a and 8a of a lead used for energization among the pieces of a lead attached in the both ends of electrodes 7 and 8 have projected from one side face of a shielding case 11, and the pieces 7b and 8b of a lead of another side have them inside a shielding case 11.

[0012] Heat joining of the top-face glass substrate 1 and the inferior-surface-of-tongue glass substrate 2 is carried out by the sealant of glass frit 10 grade, and they are sealed at a edge. It is fixed to coincidence in the crevice 9 which also formed the pieces 7a, 7b, 8a, and 8b of a lead in the frame part of the inferior-surface-of-tongue glass substrate 2.

[0013] Under the present circumstances, the pieces 7b and 8b of a lead of another side which is not used for energization are arranged inside the junction edge of the top-face glass substrate 1 and the inferior-surface-of-tongue glass substrate 2. At this time, it is desirable to set distance s from a junction edge to the point of the pieces 7b and 8b of a lead to 0.1-1mm.

[0014] According to the above-mentioned operation gestalt, a shielding case 11 can insert in a fluorescent lamp, without preparing notching in the pieces 7b and 8b of a lead which are not used for this energization, and a corresponding part. And it can perform easily making small the gap of the point of the pieces 7b and 8b of a lead, and a shielding case 11 at the time of this insertion.

[0015] In addition, since the glass frit 10 consists of non-conductive ingredients, it insulates electrically between the point of the pieces 7b and 8b of a lead, and the shielding case 11.

[0016] If an electrical potential difference is impressed above between two electrodes 7 and 8, the closed circuit of the pieces 7b and 8b of a piece of lead 7a and 8a → shielding case 11 → lead will be formed first. If a closed circuit is formed, a current will flow to electrodes 7 and 8, electrodes 7 and 8 will be heated, and discharge will take place in discharge space.

[0017] Therefore, mercury is excited and ultraviolet rays are emitted. These ultraviolet rays irradiate the fluorescent substances 3 and 4 of top-face glass substrate 1 and inferior-surface-of-tongue glass substrate 2 inside, consequently fluorescent substances 3 and 4 cover the whole surface, and emit light by uniform brightness.

[0018] Since the gap of the point of the pieces 7b and 8b of a lead and a shielding case 11 is small at this time, discharge stability can increase, it can compare with the fluorescent lamp of structure conventionally, and the light can be made to switch on with discharge voltage low about 10 volts.

[0019]

[Effect of the Invention] Since the gap of the point of the piece of a lead and a shielding case can be made small according to the flat-surface mold fluorescent lamp concerning this invention as explained above, it can compare with the fluorescent lamp of structure conventionally, the light can be made to be able to switch on with discharge voltage low about 10 volts, the discharge stability at the time of lighting initiation can be raised, and brightness nonuniformity etc. can be stopped.

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PATENT ABSTRACTS OF JAPAN

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N S G GLASS COMPONENTS:KK

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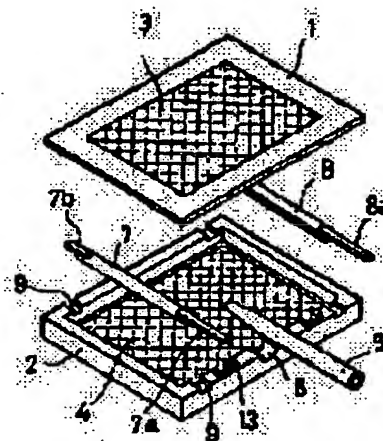
(72)Inventor : YOSHIOKA SHOJI
OZAKI MITSUYA

(54) FLAT FLUORESCENT LAMP

(57)Abstract:

PROBLEM TO BE SOLVED: To enhance discharge stability when starting.

SOLUTION: An edge part between a top face glass board 1 and a bottom face glass board 2 is thermally welded by means of a sealing member such as glass flit. At the same time reed pieces 7a, 7b, and 8a are fixed to the edge part between the top face glass board 1 and the bottom face glass board 2. The reed pieces 7b one side which is not utilized for conduction is arranged more inside than the bonding edge part between the top face glass board and the bottom face glass board.



LEGAL STATUS

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CLAIMS

[Claim(s)]

[Claim 1] The plate-like top-face glass substrate which applied the fluorescent substance, and the dished inferior-surface-of-tongue glass substrate which applied the fluorescent substance, In the flat-surface mold fluorescent lamp which equipped the space formed between the shielding case which contains this inferior-surface-of-tongue glass substrate, and said top-face glass substrate and inferior-surface-of-tongue glass substrate with the electrode of the pair by which opposite arrangement is carried out As for the electrode of said pair, the piece of a lead is attached to both ends, respectively, and one near piece of a lead minds the notch formed in the shielding case. Outside A projection, The near piece of a lead of another side is a flat-surface mold fluorescent lamp characterized by being arranged inside the junction edge of said top-face glass substrate and inferior-surface-of-tongue glass substrate.

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